

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the drawings include Figs. 3A-3D and 4A-4C, but the specification only describes Fig. 3 and Fig. 4. The specification should provide a brief description of Figs. 3A-3D and 4A-4C (see MPEP 608.01(f)).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3 and 6-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the electrode precursor layer" in line 6. There is insufficient antecedent basis for this limitation in the claim.

The recitation of "the precursor layer" (claim 1, line 7) is indefinite as to whether it is referring to the electrode precursor layer, the rib precursor layer or both. For the purpose of this examination, the claims will be interpreted to be at least inclusive of any embodiment.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Kuromitsu et al. (U.S. Publication No. 2002/0180353).

Kuromitsu discloses a method of making a plasma display panel [0002]. The method can comprise of forming a patterned electrode layer 11a on a substrate 10 and forming a rib layer

24,25 on the surface of the substrate (Figs. 19-21). A paste film used to form the rib can be coated onto the substrate using a roller coating process, a screen printing process, a dripping process and a doctor blade process [0063]. Each of the methods requires transferring a paste onto the substrate. Thus, such methods are being interpreted as transfer methods as claimed. The electrode and rib layers can be fired (i.e., sintered) simultaneously [0070]. The electrode layer and rib layer prior to firing are being interpreted to be precursor layers as claimed.

6. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Kosaka et al. (U.S. Patent No. 5,992,320).

Kosaka discloses a method of making a plasma display (col. 6, lines 34-36). The method comprises the use of a transfer sheet having a concave pattern and using an ink having curable resins (i.e., precursor ink) (col. 7, lines 10-16). The method can be used to form the electrode and/or rib (i.e., barrier) layer patterns (col. 12, lines 56-62). The electrode and rib precursor layers can be simultaneously fired (i.e., sintered) (col. 25, lines 11-20).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3, 6, 7, and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuromitsu '353 in view of Kawana et al. (U.S. Patent No. 5,972,564).

Kuromitsu is discussed above, but does not disclose that the electrode precursor can comprise a photo-curable material and that it is irradiated with light under an inert gas atmosphere. Kuromitsu does teach the need to form an electrode pattern. Accordingly, Kawana teaches that it was well known in the plasma display art (abstract) to have used a photo-curable conductive paste to form an electrode pattern (col. 3, lines 20-43). The forming of the electrode layer comprises of an exposure to light in a nitrogen gas (i.e., inert) atmosphere (col. 6, line 66-col. 7, line 9) and a calcination step at a temperature range of 450-600 °C (col. 7, lines 25-31). The method can yield highly fine electrode circuits (col. 2, lines 40-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a photo-curable material and to have irradiated the material with light under a nitrogen gas atmosphere in the method of making the electrode pattern of Kuromitsu with a reasonable expectation of success. One would have been motivated to do so in order to have formed a precise electrode pattern.

Claim 2: Kuromitsu teaches that the substrate can be glass [0050].

Claim 3: Kawana teaches that the electrode paste material can be screen printed (col. 6, lines 55-59).

Claim 6: Kawana teaches that nitrogen gas can be used (col. 6, line 66-col. 7, line 9).

Claim 7: Kuromitsu teaches that a paste film used to form the rib can be coated onto the substrate using a roller coating process, a screen printing process, a dripping process and a doctor blade process [0063]. Each of the methods require transferring a paste onto the substrate. Thus, such methods are being interpreted as transfer methods as claimed.

Claim 12: Kawana teaches a calcination step at a temperature range of 450-600 °C (col. 7, lines 25-31) for a time of 30 minutes (col. 10, lines 13-34). Kuromitsu teaches a firing time for the electrodes between 5 and 30 minutes [0070] and heat treatment of the ceramic ribs at a temperature of about 550 °C for a time in a range between 10-60 minutes [0136]-[0140]. All of the disclosed ranges at least overlaps with one another and with the claimed ranges.

Claim 13: Kuromitsu teaches a method of making a plasma display panel [0002].

Claim 14: Kuromitsu teaches that the electrode can be at least a pair of address electrodes provided independently and arranged parallel to each other (Fig. 21).

Claim 15: Kuromitsu teaches that the formation of a plurality of ribs arranged parallel to each other (Fig. 21).

10. Claims 1-3 and 6-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka '320 in view of Kawana '564.

Kosaka is discussed above. Kosaka teaches that exposure of light can cure the ink (col. 7, lines 10-23), but does not explicitly teach the exposure can be performed in an inert gas atmosphere. However, Kawana teaches that it was well known in the plasma display art (abstract) to have exposed an electrode precursor layer to light in a nitrogen gas (i.e., inert) atmosphere (col. 6, line 66-col. 7, line 9). Because Kawana teaches that such methods were operable in the art, it would have been obvious to one of ordinary skill in the art at the time of invention to have performed the exposure step of Kosaka in a nitrogen gas atmosphere with a reasonable expectation of success. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness (MPEP 2144.07).

Claim 2: Kosaka teaches that the substrate can be glass (col. 6, lines 33-54).

Claim 3: Kosaka teaches that the electrode precursor layer can be formed by photolithography (col. 21, lines 36-56).

Claim 6: Kawana teaches that nitrogen gas can be used (col. 6, line 66-col. 7, line 9).

Claim 7: Kosaka teaches the use of a transfer method (col. 6, line 30-col. 7, line 16).

Claim 8: Kosaka teaches that the transfer method can use a flexible forming mold (Fig. 5(b)).

Claim 9: Kosaka teaches that the flexible forming mold can comprise of a supporting body 11 and a shaping layer 12 supported by the supporting body. The shaping layer has a groove pattern corresponding to the protrusion pattern of the ribs (Fig. 5(b)).

Claim 10: Kosaka teaches that the rib (i.e., barrier) precursor layer can be formed on a substrate having an electrode (col. 19, lines 38-45) and that the layer can be irradiated with light to initiate curing of the photo-curable precursor (col. 19, lines 5-11).

Claim 11: Kosaka teaches that the mold is separated from the substrate (Fig. 5(b)).

Claim 12: Kosaka teaches heating at a temperature of 350-650 °C (col. 19, lines 58-64).

Claim 13: Kosaka discloses a method of making a plasma display (col. 6, lines 34-36).

Claims 14-15: Kosaka teaches forming a plurality of parallel electrodes 8 and a plurality of parallel ribs 3 (Fig. 21).

Claim 16: Kosaka teaches that the ribs can have a grid-shaped pattern (Examples 5 and 13; Fig. 20).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES LIN whose telephone number is (571)272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jimmy Lin/
Examiner, Art Unit 1715